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THE IMPACT OF WARTIME CONTROLS ON THE CONSTRUCTION INDUSTRY, AND THE IMPLICATIONS FOR POSTWAR POLICY

by

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Part II

EFFECTS OF THE CONTROLS

C O N T E N T S

PART II. THE EFFECTS OF THE CONTROLS:

a. Nature of the Industry

To understand the effects of the various controls on the construction industry, it is necessary first to have an idea of the nature and extent of that industry. Construction in its widest sense embraces all firms and workers in the construction of buildings (houses, institutions, commercial and industrial establishments, military buildings, etc.); bridges, hydraulic works, water distribution, sewage collection and disposal, and electric transmission and distribution systems; railways, roads, streets, etc. For the most part it is the building group proper which is considered in this report.

There is considerable specialization in the industry, some firms confining their activities to construction of roads, streets, and paving jobs: others to dams, powerhouses and hydraulic work; others to construction of large buildings; others to the building of houses. But, especially among the larger firms, there are many who will take any kind of construction contract.

Successive phases in Canadian industrial development have seen one or other of these predominating. From 1900 to 1920 there was a boom in railway building; overlapping this was the building of the Welland Canal and large expenditures on the St. Lawrence, extending to 1932; overlapping this and lasting up to the present has been an era of roadbuilding. This has resulted in some specialist firms going out of existence while others have branched out into new fields.

Since the outbreak of war there has been a tremendous expansion in building construction: flying schools, involving buildings, air fields, runways (roads); military camps; air fields, both military and civil; new plants for the manufacture of explosives and munitions; extensions to industrial plants for the production of war equipment and supplies.

The Dominion Bureau of Statistics, in its reports, divides the industry into three groups: (1) Building Construction; (2) Engineering, Harbours, Rivers, etc; and (3) Building Trades. The first and third groups are predominantly concerned with building construction, but part of the activities of the third group are allied to the business of the second group.

The D.B.S. reports also divide the industry into two groups: (1) General and trade contractors and sub-contractors; and (2) Municipal, provincial and federal governments and government boards. An important aspect of the construction industry is that much of it is carried on by the government groups mentioned above. During the depression years in the '30's the activities of governments were increased and saved the industry from almost complete collapse.

Organizations

The construction industry is organized locally, provincially and nationally; and also by trades. The local association is generally known as the Builders' Exchange. The provincial organizations bear various names, one being, for example, the Association of Construction Industries of Saskatchewan.

The national organization is the Canadian Construction Association, formed in 1918 at a meeting of building contractors, supply men, and other dealers. Its objects are to promote better relations between the members on the one hand and owners, architects, engineers and labour on the other, and to establish and maintain standards of good practice between members within the industry.

The C.C.A. has five classes of membership: (1) General Contractors; (2) Trade Contractors; (3) Manufacturing and Supply; (4) Collective Membership; and (5) Special. The first group includes the bulk of the large general contractors operating in Canada. The second group is made up of specialists, such as steel construction firms, those handling cut stone, elevator manufacturers, etc. The third group is made up of firms which are engaged in the manufacture and distribution of materials and supplies used in the construction industry. The latter are generally known as the Builders' Supply group.

The Builders' Exchanges, represented in the fourth group, are made up of the same groups referred to above, organized locally. They also include other, usually smaller, contractors and builders who are not members of the C.C.A. It is in this group that housebuilders would be found if at all, but as a matter of fact few of them are.

In Toronto there is a Housebuilders' Association which is made up of builders who are chiefly interested in the construction of houses. It is understood to have been formed to obtain low wage rates in housebuilding trades under the Industrial Standards Act. Outside of this the housebuilders are unorganized and many, if not most of them, are speculators rather than builders.

The Trade Associations comprise master painters, master plumbers, electrical contractors, plasterers, etc. Some of these are organized nationally, notably the plumbers (in the Canadian Institute of Plumbing and Heating). The primary steel producers and the steel fabricators are organized in the Canadian Institute of Steel Construction. The chief function at this Institute is the production of a handbook on standard rolled shapes made in Canada.

Another national body is the National Construction Council, which includes representatives from the Canadian Construction Association, the Canadian Institute of Plumbing and Heating, the Canadian Manufacturers Association, the Engineering Institute of Canada, the Royal Architectural Institute, the Trades and Labour Congress of Canada, and several trade associations. This is an ad hoc group whose activity depends considerably on the pressure of current issues or programmes. For example, it prepared and presented a brief to the Rowell-Sirois Commission. Through its Toronto office it continues a formal existence and could function again if need be. At the moment it is particularly interested in a national survey of construction projects available for the post-war period.

The National Construction Council embraces practically all the interests connected with the Construction Industry, directly or indirectly, and if it were united could speak with authority for all the big interests, but the Canadian Construction Association speaks with a Dominion-wide organization most effectively for the influential elements in the Construction Industry. It sets standards for the treatment of labour, and for dealing with the public. The headquarters office in Ottawa keeps in touch with government policy and action as it may affect the industry and can effectively undertake to speak for the industry to the government and to the public.

The Association cannot speak for the Housebuilders, organized or unorganized, and very often the latter are in opposition to the position taken by the C.C.A. or the Builders' Exchange. The Daily Commercial News and the Building Record, the principal trade paper issued in Toronto, occasionally has an editorial which reflects the attitude of the housebuilders, but it cannot be said to represent them.

The National Joint Conference Board consists of nine labour men, all representing craft unions, and nine representatives of employers drawn from all parts of the Dominion. At the conference in Ottawa where the Board

was set up (under the auspices of the National Labour Supply Council, in February 1941) there were 31 employers' representatives and an equal number of workers' representatives. Included in the latter were three representatives of the National Catholic Unions, but none of them is on the Joint Board. Whether this was of their own volition, or by indirection is not ascertainable. In the account of the Conference there is nothing to indicate how the members of the Board were chosen.

Zone Committees were set up, and are supposed to deal with local questions arising out of such things as the abrogation of provisions of the Fair Wage Act relating to working hours, etc. Experience has proved that they have little or nothing to do, and there is no prospect of them having any more now that the War Labour Board has come into existence with its regional boards.

The value of the Joint Board lies at present in its potentialities. It is in existence and has acquired experience in dealing jointly with questions affecting both parties. Any new board set up in the future has to acquire some similar experience before it can accomplish anything. Their present program may or may not have significance, but it does indicate that they have given thought to the subject, and they should be able to give point to some of their suggestions if requested to do so.

Size and Importance of the Industry:

The importance of the construction industry is shown by the tabulated data. (Appendix)

The net production of all construction industry, according to the Canada Year Book, varied between $63.0 million (1933) and $386.7 million in 1929. The percentage of net production in the construction industry to the total net production for Canada varied between 6 and 10 per cent. again in 1938. For purposes of comparison the corresponding figures for iron and steel are also shown. It will be observed that up to 1930 the proportions are very similar, but iron and steel held up better in the '30's. In the period 1926 - 1931, about 6 per cent. of the total salaries and wages paid out in Canada were within the construction industry. In succeeding years this fell to a low point of 2.6 per cent. but climbed up to 4.75 per cent. by 1940. (Figures from National Income, Appendix 4, Rowell Commission report.)

The importance of building construction in the total construction picture is shown by the figures and chart of the main divisions. These show that the value of building construction constitutes about one-third of the total industry, running up to 42 per cent. in 1933 according to the D.B.S. Census of Industry Report.

The division of building construction amongst the four groups has varied considerably. Residential and commercial building were the most stable, running around 30 and 20 per cent. of the total respectively. Industrial building was quite variable, from 14 to 31 per cent. of the total with institutional building averaging about 14 per cent.

The effect of the war and the defence program on the industry is shown in the index figures for employment in building, and in highway construction. In building construction the volume of employment rose from 52 in 1936 and 54 in 1939 to 144 in 1941. (All figures for June 31 in each year; from D.B.S. report on the Employment Situation, August 1941.) The index for employment in highway construction, (much affected by relief works projects in the depression period) dropped from about 225 in 1938 and 1939 to 180 in 1941. These figures indicate that there was a substantial war boom in the industry up to June 1941, and it is continuing as far as the evidence is available. Much of this may be due to other items of construction than actual building, such as clearing, levelling of landing fields and airports, construction of roads and runways, etc., which amount to a

very large sum and are a large element in the activity of contractors. (This point is important because the larger building contractors do not confine their activities to the construction of buildings, whereas the present study is definitely so restricted.) The relevant items in the attached charts show the values of contracts awarded annually and the amounts devoted to residential, industrial and business building respectively. The maximum value of total contracts was $576 million in 1929. The maximum amount of business contracts was placed in the same year, and the maximum amount of residential contracts the year previous. The maximum of industrial contracts affected by war production has so far a appeared in 1940.

In terms of percentages rather than absolute amounts, the maximum proportion attained by business contracts was in 1927, 39 per cent. of the total. In 1939 residential building reached a maximum of 36 per cent., and for Industrial Contracts 35 per cent. in 1940.

In spite of the impressive size of many of these figures, it should be noted that the total proportion of net production or of material income, represented by construction is not as large as is sometimes thought. In 1929 at its maximum it was nearly ten per cent.; but it has been as low as per cent. This is a matter of great importance. Unless a very large degree of secondary employment can be assumed as resulting from primary construction expenditures, it does not follow that normal construction by itself will be enough to prevent or bolster a large contraction in the national income, or, put in another way, a programme very considerably larger than normal commercial building will be necessary to ensure an adequate post-war reserve.

PART II. THE EFFECTS OF THE CONTROLS:

b. Nature of the Controls

The outline furnished by the Committee as a pattern for the studies is better adapted to a factory industry such as boots and shoes, or meat packing, than it is to the Construction Industry. It must be borne in mind from the outset that each construction job is an entity which may never be duplicated. The exceptions to this are blocks of flats, built at one time, a group of houses under the National Housing Act or the Wartime Housing Act.

1. Output

There are no regulations directly affecting the volume of output. Licensing and priorities do this indirectly but there are many exceptions. They will be discussed in another place.

2. Plant

There is no fixed plant used in the construction industry. For a small house there may be nothing used at the job beyond hand tools and wheelbarrows. In larger centres a power-driven excavator is used for the cellar but in smaller places the excavation may be done by horse-drawn scrapers, and hand shovels. If a poured concrete foundation is to be used, probably a concrete mixer will be used but it may be turned by hand. As the size of the job increases a power-driven mixer will almost certainly be used. If there is much form work to be done there will probably be a portable power saw on the job.

If the building is more than two stories high, an elevator or hoist may be used to carry up materials, especially if it has a concrete frame, or brick walls. No additional plant is likely to be used unless the building has a steel frame, or has large spaces to be spanned by trusses, which necessitates the use of a derrick. Large structures frequently have a scaffold suspended from the roof with mechanical hoisting apparatus on

which the masons stand while laying brick or stone.(1)

One of the developments of the last twenty-five years has been the specialization of "Mill Work". All the lumber used for "trim", panel work, stairs, etc., is finished in the mill, requiring a minimum of fitting and erecting work. "Ready-cut", or "Alladin" houses are just an extension of this, reducing still further the work of erection. But if the construction industry consists essentially in the erection of building structures, mill work is one of its "purchased parts". The use of pre-fabricated units is another aspect of this development.

So there are no regulations affecting plant construction because there is no plant in the sense of a textile plant or a packing plant.

3. Standardization

As pointed out above, each construction job is a particular one, so there is no such thing as a standard product. There are standard steel buildings that can be purchased just as there are ready-cut houses, but they are factory products and in no sense typical of the construction industry.

It is impossible to obtain a license to erect a moving-picture theatre, but that is not the result of a move to restrict diversity of product.

When there is little demand for new buildings the building contractor may turn to the construction of roads and bridges, ditching jobs, etc. There has been no such move as a result of wartime regulations.

4. As already pointed out, due to the nature of the industry, there can be little if any standardization of product.

5. Materials and Supplies

The chief materials and supplies affected by regulations are: steel, lumber and plumbing supplies.

Immediately on the outbreak of war, the Canadian Institute of Steel Construction offered its services to the Government, but little was made of it. The primary steel producers, a small well-knit group, were called to Ottawa and arrangements were made to control the output and distribution of primary steel. After consultation with the C.I.S.C., the Canadian Construction Council and other interested parties, the number of sizes and shapes of steel rolled in Canada was reduced from 267 to 70. Distribution is controlled by means of priorities.

Steel fabricators, who are the largest users of rolled shapes, buy their supplies direct from the producers. Other users, whose needs are small, are supplied by warehousemen who buy from both domestic and foreign producers. Warehouse stocks are under the direct control of the Steel Controller through local and national supervisors. Priorities have been set for the small users now as well as the large ones so that it is almost impossible to get steel without a priorities number.

There has been no change in price since June 1940 except for steel castings which advanced 7½% in September 1940.

Maximum prices have been set for lumber, wood shingles and mill work but not soon enough to prevent a rise in the price of rough lumber of very considerable proportions. The import of hardwood lumber is prohibited

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(1) In excavation work in rock, drilling machinery and other auxiliaries, such as compressors, may be used, as well as pumps for keeping down water, but they do not change the picture.

under the War Exchange Conservation Act. This has led to a scarcity of birch flooring and the practical disappearance from the market of oak flooring. The search for substitutes has resulted in the use of elm in place of oak.

The influence of the Timber Controller was responsible for the use of British Columbia plywood in great quantities in the defence building program. This was partly due to the scarcity of dry lumber of other sorts.

The importation of Plumbing Supplies was prohibited under the War Exchange Conservation Act. This did not affect the industry very much as this class of goods was used mostly in high class houses, the building of which has practically ceased.

Import and Export Licensing are of practically no consequence as the import of all construction materials is prohibited or under the supervision of one of the Controllers.

The effect of the Foreign Exchange Control is very difficult to appraise. The need for foreign exchange involved in a construction project is one of the factors involved in the granting or withholding of a license to build. I was unable to find anyone who knew of any direct effect of the Foreign Exchange Control on the industry although I questioned both government officials concerned and people in the industry who should be in a position to know.

The recent Order in Council P.C. 8527, putting a ceiling on prices will keep all miscellaneous supplies at their present level.

6. Wages and Hours

The most important regulation regarding wages and hours is the Fair Wages and Hours of Labour Act with its schedules of rates attached to government contracts. Section A says: "By the term 'current Wages' and the term 'hours of labour' fixed by custom in the trade in the foregoing are meant respectively the standard rates of wages and hours of labour recognized by signed agreements between employers and workmen in the district". This means that if there are local agreements regarding wages or collective agreements made mandatory by provincial governmental decree, these collective agreements fix the wages to be paid on government contracts.

Orders in Council passed various times abrogated the provisions of this act re working hours and the Zone Committees of the National Joint Conference Board were authorized to concern themselves with requests for further action of this kind. There have been no cases recently.

The most recent action putting a ceiling on wages, P.C. 8253, now dominates the situation as far as wages are concerned. Locally, (in Montreal), the industry has decided not to negotiate any new agreements but simply to pay a cost-of-living bonus. Previously the industry had an understanding with the government that they would not be required to pay the cost-of-living bonus until the expiration of their collective agreements, so that wage rates used in figuring the cost of a job would not be altered before the job was finished. The new regulations do not come into force in the Construction Industry until February 1942 to enable existing contracts to be completed. New contracts will have to be drawn in the light of the new regulations.

7. Selling Prices

There are regulations regarding selling prices for materials used by the industry but none for the price of its products.

8. Profits

The regulations regarding profits are the general provisions of the Excess Profits Act and of the Income Tax Act. The Special War Revenue Act cancelled the exemption of building supplies from the Sales Tax which had been granted to stimulate building activity. In addition, an Excise Tax and War Exchange Tax were placed on all imported goods. But practically all materials entering into buildings are now of domestic origin so that only the Sales Tax is of importance.

The heavy taxes on income tend to limit the operations of construction companies, as of anyone else, for after a certain amount of business has been done practically all further profits go to the government. Most of the people in the industry, however, take the stand that the construction of the various projects is necessary and it is the job of the construction industry to carry them out even if they do not make any more money.

Bidding is keen and close on all government contracts by all reports although profits are small and it is pretty generally agreed that the industry has done a good job all told at a very reasonable price.

9. Capital

Raising of capital funds is a very important factor in large building projects of a speculative nature and getting the contract for a large job, say a hotel, may be contingent on taking a considerable block of bonds in part payment.

None of these projects are under way now and in the case of a government contract any builder of standing can get bank credit for working capital. If there were no licensing and no war contracts the control of credit by the Bank of Canada might be a more important factor.

10. Licensing

Licensing is vested in the Controller of Construction, formerly in the Director of Priorities. No one can: (1) instal equipment (exceeding $5000 in value) in any building, (2) construct any building of value exceeding $10,000, or (3) make repairs or extensions exceeding $2500, without a license. Houses, (containing 1 - 3 dwellings), churches and educational institutions are excepted.

This is the most important wartime restriction in the Construction industry. It has not interfered with the building of houses to any great extent. National Housing Act activities are all exempt from its provisions. It has resulted in the curtailment of building of stores, prevented the building of moving-picture theatres, and has made the carrying out of other projects contingent on the substitution of materials, e.g., reinforced concrete for steel building frame.

PART II. THE EFFECT OF THE CONTROLS

c. Detailed Impact of the Controls

The effects of the controls listed in preceding sections may now be considered seriatim.

1. Volume and Character of Production:

The chief factor is the license before proceeding to build. It is difficult to distinguish between the effects of wartime controls and other wartime phenomena. If the project involves the use of much structural steel, the issuing of the license may be dependent on the substitution of reinforced concrete for steel. If the use of reinforced concrete is not considered satisfactory by the principals or their technical advisers the project may not be proceeded with. In other cases the Controller of Construction may not think the project justified in wartime and the license refused.

Control of materials has enabled a very large volume of construction to be carried out in a minimum of time without any large increases in the cost of materials, except lumber. If a contractor needed material for a defence contract the controller saw that he was supplied with it.

Whether Rent Control has had or will have any effect on the building of new houses is difficult to say. In Hamilton the real estate agents think that rents were frozen at too low a level and that it is having a discouraging effect. However, outside of the Province of Quebec there is very little building of houses to rent. They are built to sell. In any event the National Housing scheme far outweighs any effect of Rent Control.

In the fifteen months from March 31, 1940 to June 30, 1941, 2000 dwelling units were built under the National Housing Act. On these houses loans to the value of $21 million were made so that the value of the houses was at least $25 million. The D.B.S. report on the Construction Industry for 1939 gives the total value of new construction on dwellings, single, semi-detached and duplexes as $35,780,000. This shows that the N.H.A. building comprised about $\frac{3}{4}$ of the total value of construction in the housing field.

It is quite possible to acquire a five-room house under the N.H.A. for $25 or $30 per month. This gives the owner a modern house of his own for the price he would have to pay for an old, probably run-down house if he rents.

The man who would build a house costing from $15,000 to $40,000 is deterred because: (1) he has to have a license and may not be able to get it; (2) he knows that some things are difficult to get, and some others, such as high quality plumbing and kitchen fittings, impossible to procure at any price; (3) he is conscious of high defence tax, income tax; and (4) he is deterred by the general uncertainty as to what is going to happen. It is not surprising that this class of building is at present practically at a standstill.

The curtailing of new models and the recent curtailment of production of certain commodities must indirectly affect the construction industry. These industries would be doing very good business due to increased earning power of consumers and no doubt some of them would want to increase their producing capacity. Of course these results were anticiapted and are some of the reasons for curtailment of production.

2. Volume and Character of Employment:

The great volume of building involved in the war program together with the use of wood wherever possible created an abnormal demand for carpenters. This led to a great influx of men into the trade. In many cases all that was required of them was the ability to handle a hammer and saw, which does not take long to acquire.

This led to a demand that two grades of carpenters be recognized in the wage schedules of the Department of Labour which are attached to all government contracts. The question came up in the National Labour Supply Council and was opposed by the members representing organized labour. Their objection was that if there were two rates the lower one would become the ruling one. The upshot was that the matter was dropped and the single classification was retained.

The concentration on frame construction for defence projects and the Wartime Housing, along with the curtailment of building by Licensing tends to cause unemployment among bricklayers, stonecutters, plasterers, slaters, tile setters, etc. They have to depend on the building of small houses and other projects exempt from licensing or big projects started before licensing was set up.

There does not seem to be any unemployment in the industry now but the work for lathers, plasterers, marble and tile layers, terrazzo layers

and polishers, ornamental iron workers tends to decrease. There was in former years a shortage of lathers and plasterers, so that now there are enough of them for the work available and fewer young men will enter the trade. The bricklayers are getting old and many of them will be retiring; some of them will be taking other jobs and no young men will enter the trade. When the war is over there will probably be a shortage of workers in these three trades.

Marble, tile and terrazzo workers can easily get over into cement and concrete work when their own trade goes slack. Actual figures of conditions are not easy to procure, but it seems clear that there will be no dearth of workers in other building crafts, but rather too many.

One of the difficulties of evaluating the unemployment situation is the importance of the small contractor in the building field. When the speculative builders reduce the scale of their operations, the workers go elsewhere for jobs, of which there is no scarcity now. The builders themselves may just keep going with an odd house now and then or with alterations and repair work. One of the features of the construction industry is the lack of continuity in the relations between the employer and his workers. Employment is for the duration of the job. When it is finished, if the contractor does not want them on another job they drift off to a new employer.

Wage Rates and Labour Relations:

In the past, wage competition has been severe, and has defeated the efforts towards stability of successive union organizations. There has always been a wide fringe of unskilled and semi-skilled labour around the more regulated craft groups. Low wage conditions and chronically competitive undercutting by contractors in the depression years forced the trend towards protective legislation such as the Industrial Standards Acts of Ontario and Alberta, and a good deal more standardization of basic rates has now become general.

In the large centres the large contractors take the lead and (according to my information) try to maintain reasonable wage rates by agreement. This is supplemented in Quebec by the Minimum Wage Law but more particularly by the Collective Labour Agreements.(1) The industrial sections of the province are pretty well covered by agreements. That means that all contractors, large and small, are obligated to pay the standard rate, although some rate-cutting is probably still not unknown.

The rates set out in the agreements apply to all workers, union or non-union. The rates are intended to be minimum rates, but in the majority of cases they are the actual rates paid. As long as the agreements remain in force organized labour does not have to fear rate-cutting, but the existence of large numbers of unemployed artisans in the future might easily bring a demand for a review and revision of the rates downward.

Theoretically the situation in Ontario is very much the same under the Industrial Standards Act; but criticisms have been heard to the effect that the Labour Board which administers the Act has become a bureaucracy instead of a joint board of employers and employees and administration of the law is said to have become dictational rather than the result of free negotiation.

There is nothing to indicate that organized labour is ever consulted by the Construction Controller, unless a change has taken place in the last three months. The supply of labour was a factor in the determination of

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(1) These are now in force, for building labour, in: the Eastern Townships, Quebec, Three Rivers, Val d'Or, and Amos, Chicoutimi, Hull, Joliette, Sorel, St. John and Iberville, Terrebonne County, St. Hyacinthe, and Montreal.

policy with regard to control, but there is little or no evidence of any consideration for the interests of labour in the administration of control. If the Controller wants advice on the matter he could go to the labour Coordination Committee, or now to the War Labour Board, but there is certainly no organized policy of consultation. Up to now materials and foreign exchange have been the main factors considered in regard to applications for licenses to build. It is conceivable that if and when the volume of construction falls off, labour may bring pressure to bear on the Controller to ease up on licensing restrictions in some localities in order that slack labour may be taken up.

3. Character and Organization of the Market:

Government projects have dominated the market to such an extent that other factors are relatively insignificant. This statement is supported (but not fully demonstrated) by the following figures.

Total value of all building construction in Canada in 1939 was $258,662,409. Total value of construction contracts let by the Department of Munitions and Supply in 1941 was $91,000,000. The following figures from the D.B.S. report on the Construction Industry for 1939 and advance figures supplied for 1940 show the main reasons for this.

Value of Armories and Barracks	$3,920,383	$34,797,054
Aeroplane Hangars	720,534	18,379,614
Factories, Warehouses, etc.	21,385,961	59,688,140
	$26,026,878	$112,864,808

The figures for Armories, Barracks and Aeroplane Hangars are definitely government expenditures and no doubt a large part of the increase in Factories and Warehouses is due to the expenditure under this head financed by Government advances for defence purposes.

The building of large houses has almost ceased for the reasons given in section 2 above.

The speculative builder of houses is not operating now for a variety of reasons. In the first place he generally makes use of cheap non-union labour and pays less than the union scale. There is plenty of work now at standard rates for everyone so that now he does not enjoy this advantage. He also makes use of second-hand, or second-quality materials both of which are now very scarce. The N.H.A. program has also cut into their field. In Montreal there is still quite a lot of building of apartments in spite of the factors mentioned.

4. Competition within the Industry:

The relative scarcity of steel and the edicts of the Timber Controller have resulted in the use of wood for large span trusses where otherwise steel would have been used. This has directed attention to the possibilities in the use of timber for large spans and the advantages of new types of construction.

It has been demonstrated that the largest building spans can be bridged with wooden trusses using the new methods of construction. This has strengthened the competitive position of lumber as against steel. But again it must be pointed out that this is not because of the scarcity of steel, and the desire for speed in erection.

Due to the familiarity of the Timber Controller with plywood and its qualities, and the scarcity of dry lumber, the use of plywood has increased very greatly, vast quantities of it having been used in the construction of hangars, schools, etc. This has caused some heartburning on

the part of the gypsum manufacturers who feel that gypsum board might have been used to good advantage at a lower price.

While the use of new billet steel for reinforcing rods has not been prohibited it has at least been discouraged. This has resulted in greater use of old rails for the manufacture of reinforcing so that there is now a distinct shortage of old rails for this purpose.

As pointed out elsewhere the prohibition of the import of hardwood has put a premium on our native woods, particularly birch. Oak was formerly used almost exclusively for desks and in Ontario for flooring. Furniture manufacturers have turned to the use of birch instead of oak so that it is now in great demand. A maximum price was placed on it in Canada but no restriction on its export to the U.S. where prices are higher so that producers are shipping it there to take advantage of the high prices.

In the wartime houses wall fibre board takes the place of lath and plaster. There is no brick work except a small chimney so that practically only three trades are employed: carpenters, plumbers, and electricians.

Some peculiarities of the Construction industry have already been pointed out. One other might be mentioned, viz., competition between large and small firms. There is plenty of room and plenty of scope for both large and small units. The value of a building contract may vary from a small house costing $3000 to a great project costing a million dollars, or even more. The small contractor is quite capable of handling small jobs but would be lost on the big one. Conversely the firm which is able to handle a contract of a million dollars, is not interested in the small one, ordinarily. It is generally recognized by architects that where tenders are not called for by advertisement in the newspapers, a selected list of contractors, who are likely to be interested in the job, are asked to bid.

Wartime conditions do not give the big firm any advantages over the small one except on the big projects which the small firm is unable to handle anyway.

5. Integration with Other Industries:

The primary Steel Producers and the Steel Fabricators are all members of the Canadian Institute of Steel Construction. They collaborated with the Steel Controller in the reduction of the number of sizes and shapes of rolled sections. Several of them are members of an Advisory Committee on steel and close collaboration has had the effect of bringing them closer together. There is a more or less defined division of the field among the primary producers and it is quite conceivable that this will continue after the war. This would create a situation parallel to that existing in the primary textile field where competing firms do not compete.

The steel producers and the fabricators had formerly collaborated in the production of a steel handbook so that this is nothing new and could hardly be called a move toward integration.

6. Internal Managerial Organization:

One construction firm with large government contracts has one man who spends most of his time in Ottawa. This may be due to the difficulty of working with government departments rather than to wartime controls.

The various labour controls and their consequences have increased the importance of Industrial Relations and forced major executives to give more of their time to this field. The various tax regulations and their implications have also necessitated more time and attention. While it is doubtful if any firms in the industry have changed their organization in a formal way, it is probably true that virtually they have to have someone in the organization who specializes in these questions relating to their relation to government and government controls.

7. Do the Controls Encourage Innovations?

The only important innovation is the use of wood with the new methods of construction for large span trusses. These were in use before the war but the difficulty of getting steel has given wood a lift in the fight against steel. The developments in steel construction had driven wood almost entirely out of the field so that the widespread use of wood is an innovation.

An important innovation appeared in the building field some years ago, known as Composite Construction, in which a light welded structural frame was used as the reinforcing for concrete. It is economical in the use of steel and in construction because the steel frame is strong enough to support the concrete while setting. There are few if any places where it is being used just now but with increasing scarcity of steel and priorities for defence purposes the use of composite construction would be economical for such buildings as are licensed.

The shortage of monel, chrome and enamel steel for kitchen and sanitary fittings offers a chance for the introduction of plastics into the field. So far, the makers of plastics have made no effort to exploit it, probably because they have sufficient other business.

In general, the attitude towards technical developments is one of scepticism and lack of interest. A great deal of work will be necessary to arouse enthusiasm. Men in the industry, rightly or wrongly, demand to see a practical demonstration of the possibilities in Canada before undertaking any great innovation in their own procedures.

Two main types of houses have received some support: steel and concrete. For economical results the units have to be pretty large, which means large production equipment units. The construction units being large require special transport equipment and present serious difficulties in long distance transport. They also require a rather large and expensive equipment for setting them up. In large centres of population where a great many units could be used they would probably prove economical. But in smaller places remote from the centres of production the economy is doubtful. This is not to say that they are impractical, but simply to indicate the nature of the difficulties in the way.

A great deal can be done by the use of standard designs which permit alternative arrangements, with standard equipment units worked out and available in standard packages, so to speak. This alone, given in advance plans for a progressive building programme might be enough to start with. But many other technical developments could be explored. (See Part IV,b.)

8. Capital Investment:

The general effect of the controls is to discourage investment in the building of houses for example. As explained in section 3 above, the building of large houses has almost entirely ceased. Licensing was designed to prevent the investment of capital in buildings and is having the desired effect. The erection of a chain of moving-picture theatres was prevented by the refusal of licenses. They do not discourage the building of small houses for a large number of them have been built in Verdun during the summer and fall.

9. Industrial Dislocation:

The big government projects in remote places have made it necessary to shift large numbers of workers to these far-away districts. However, it is nothing new for the industry to have to handle such situations and there is little evidence of dislocation in the industry. Dislocation caused by the war itself has resulted in a good deal of dislocation in transportation e.g., the transport of huge quantities of lumber from the west coast by rail

instead of by water. Also the export of large quantities because the ordinary sources were cut off. But those are not the result of controls.

10. Other Effects:

Licensing and Priorities along with increased cost are the things that are causing the postponement of building. The general opinion of men in the industry, as I found it, is that very little of the building that is prevented now by licensing will be done after the war. In most cases the desire to build springs from a desire to capitalize the present situation marked by high earning power of the workers and their desire to spend it. Some of it is to cater to new demands caused by the development of new industrial areas and increased population in older areas. In many cases these communities will melt away with the coming of peace and the opportunity will go with them. There are a few cases such as buildings for educational institutions, government buildings, etc. which will be available but they do not amount to very much relatively.

There may be a problem with regard to licensing before the war is over. There is one body of the opinion in the industry that the building boom will be over by the spring of 1942 and that the people now engaged in construction will have to get into some branch of production work where they will be needed. Others are not so sure that the program will peter out but if it does they think that steps should be taken to keep the industry from going to pieces. This could be done by encouraging building instead of discouraging it. The Minister for Air says that the program of development is practically completed. Sufficient army camps are in existence to take care of all the men that can be enlisted or who reach the draft age for training. There remain the power and industrial development on the Saguenay and the naval, military, air centre in Newfoundland. These are not sufficient to take care of all the people now engaged in construction.

PART III.

POLICY AT THE END OF THE WAR.

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1. Should The Controls Be Abandoned?

There does not appear to be any general answer to this question; the controls must be considered individually.

a. Industrial Disputes Investigation Act.

The general provisions of this Act have been proven by experience to be sound and beneficial to the community. Its retention in peace time would be in the best interests of all concerned. Although there are few, if any, instances of its application in the construction industry to date, its existence makes it possible to invoke it should a situation arise to justify it? An official of a trade organization expressed himself definitely in favor of its retention because it would provide additional opportunities for conciliation and arbitration which he believed to be beneficial.

Sections 57 and 58, restricting the right to strike or lock-out after a dispute has been referred to a board and before the verdict has been rendered, should be revised after the fullest consideration by both employers and workers so that their rights may be safeguarded without damage to the interests of the community. The instructions and interpretations should be rescinded and Boards allowed to make their own decisions under the Act on the merits of the case presented.

b. Fair Wages and Hours of Labour Act.

This Act for the protection of workers on government contracts should certainly be retained.

c. Order-in-Council, P.C. 6286 (the so-called "Poaching Order")

This will not be needed when the war is over and should be rescinded immediately peace is proclaimed, if not before. When the Employment Service has been set up under the Unemployment Insurance Act regulations will probably be adopted that will make it unnecessary.

d. Order-in-Council, P.C. 2680

This order, setting forth the principles of sound industrial relations, should be made more explicit so that the right of employees to organize and bargain collectively with their employers is beyond question. The crystallization of this right in law would probably reduce labour troubles in both war and peace time.

The public demand for the banning of strikes in wartime is being met by the counter demand on the part of organized labour that if such action is taken complementary action should compel employers to deal collectively with organized labour. The wisdom of such action is debatable and the implications should be carefully explored before embarking on such a course.

e. Order-in-Council, P.C. 8153

This order places a "ceiling" on wages. Now that a definite ceiling has been placed on wages there is good ground for a demand for a floor under them when the war is over. If workers are not to be allowed to profit by an increased demand for labor, they should not be called upon to suffer when the demand falls off.

Reducing wages - the price of labour - will not materially reduce the supply, so that a temporary oversupply should not be allowed to knock the bottom out of the wage structure.

So much depends on the course of events between now and the end of the war. Some construction men, with long experience in the industry and also in a position to know the trend of events, think that the war boom in the construction field is over and that business will taper off rapidly during the coming winter.

The thing that I envisage is somewhat analagous to that done by the National Resources Committee in the U. S. A., published as Technological Trends and National Policy Including the Social Implications of New Inventions, 1937. I do not think that any committee working within the Unemployment Insurance Act can do anything vital in this field.

h. The National Joint Conference Board

This Board should certainly be continued. Its roots go back to a Joint Conference of representatives of employers and workers held in Ottawa in 1921 to consider problems confronting the industry. It has proved its worth as a medium of conference between employers and workers and will be just as valuable in peacetime as in wartime. Indeed it might well be copied by other industries because every additional facility provided for intercourse and exchange of opinion between the two groups is all to the good of the community.

It is true that the Zone Committees have not found much to do but with less rigid control of wages by government there should be plenty of opportunities of service for them in interpreting and applying national agreements to local conditions.

i. Wartime Prices and Trade Board

Mr. K. W. Taylor, the secretary of the Board, in his paper "Wartime Control of Prices", says "a temporary shortage can produce a sharp price rise, and even if the shortage is later removed, much of the damage to the price structure remains". The reverse is also true, and a Board alive to the possibilities may prevent disastrous breaks in the market.

By Order-in-Council P.C. 8527 the government takes complete control of prices of all commodities placing a ceiling on all prices with provisions for necessary exceptions to be made by the Board.

Such control should be continued until such time as depleted stocks of consumer's goods are replenished. This would be true also of such things as builders' hardware and anything else where there is a scarcity of goods due to wartime priorities. If the steel producers show any disposition to continue wartime collaboration and maintain high prices to the secondary industries action could be taken to lower prices as conditions warranted.

On the other hand it might be expedient to put a floor under some prices where excess stocks existed such as occurred in the lumber industry at the close of the last war.

Much depends on the course of events. If the war reaches a stage of attrition, or approaches a stalemate where there is no further expansion of training facilities or defence projects, the producers of commodities may slacken off their efforts so that only moderate stocks will be on hand when peace comes. It might well be that as the war pressure ceases the Economic Committee of the Cabinet would have time to give consideration as to how that situation might be met. As the number of men engaged in the construction of defence projects falls off and if the demands for lumber decrease the operations of builders operating under the National Housing Act will be made easier. That, along with increased earnings, may increase the number of houses built. If the production industries do not take up all the slack, if and as construction falls off, it might be a good move to give additional encouragement to the National Housing scheme.

There would seem to be an opportunity to do something in between the National Housing scheme and Wartime Housing. If the idea of standardized structural units of improved quality could be utilized in houses under the National Housing scheme better houses than those built under the Wartime Housing scheme and of a more permanent character might result. Due to a longer life these would not have to be amortized in such a short period and therefore could be rented at relatively lower rates. There would be openings for houses of this character in such permanent industrial centres as Hamilton, Kingston, Shawinigan Falls, etc. Architects might be put to work on this problem.

With continued demand for help in the munitions plants the exit of non-skilled men from the construction industry should be facilitated. This will leave the industry with what might be considered a normal supply of craftsmen to deal with. If no further thinning out is necessary there will be a good case for maintaining the price of labour, namely wages.

It is possible to keep wage rates at the same level, and to reduce labour costs and increase the supply of goods at one and the same time by increasing the productivity of the workers. If the inducement were offered, to maintain not only basic rates but the cost-of-living bonus too on condition that productivity were increased in inverse ratio to the fall in the cost of living great results might be achieved. (This means that if productivity increased one per cent for every decrease of one per cent in the cost of living no change in wages would be made). This would result in lower labour costs, increased supplies of goods and increased purchasing power.

The details of this would require some working out but with the co-operation of both parties a method of doing it could be found.

f. Industrial Disputes Inquiry Commission

This Commission has done some good work and has justified its existence but it would not have been necessary if the Conciliation service had been properly staffed. It has been very severely criticized by organized labour on the ground that it was just a device to delay the appointment of a Board under the I.D.I.A. It has also been criticized for trying to get workers to accept a Company Union when the basic trouble was recognition of an Independent Union.

The Conciliation Service has been built up recently by a number of recruits, so the Commission can probably be allowed to pass with the coming of peace.

g. The National Labour Supply Council

The Council was set up in June 1941 by Order-in-Council P.C. 2686 "to advise on any matters touching labour supply for industry which may be referred to it by the Minister".

In October of the same year the Labour Coordination Committee was set up by the Government at the request of the National Labour Supply Council to facilitate access to various government departments. Its functions as set forth in the Order-in-Council P.C. 5922, are "to promote coordination of all government agencies in relation to all matters affecting labour; to anticipate the labour and manpower requirements of the war program as a whole; to consider the needs of the war program with respect to training employers in industry; to refer questions to, and consult with, the National Labour Supply Council in order to secure the considered judgment of employers and employees", etc.

As a matter of fact it has functioned as a policy committee engaged in framing labour policy for the government. The National Labour Supply Council has been consulted in some instances but in general their advice, if not confirmatory, has been disregarded.

The National Labour Supply Council, composed of representatives of organized labour, (both craft and industrial unions) and representative employers, is in first-hand contact with industrial conditions. If the basis of representation were broadened to include other neutral representatives who have a social interest this committee might perform a very valuable function.

The Council should concern itself with social and economic changes and trends and their effect on the labour market so that it will be able to forecast coming changes for various classes and categories of labour.

The National Employment Committee, made up solely of representatives of employers and workers, if it runs true to form, will concern itself with keeping the Employment Service neutral as between employers and organized labour.

Loosening up of Licensing would help in the same way but unless a greater supply of materials were forthcoming it would probably not help much. At the close of the former great war great quantities of spruce lumber remained on hand which caused the collapse of the market and great loss to the holders of the lumber. A like condition at the close of this war can be prevented by control of production as the excessive demand drops and/or control of prices and distribution after the war. It would seem advisable to control the production of new lumber and control of the price of existing stocks.

With regard to steel the situation is different. There are only a few producers of primary steel in Canada and they are operating under an agreement which controls the sizes, shapes, etc. produced by each mill. It would seem wise to retain the existing controls until such time as the existing stocks are distributed and the division of the market among the mills has been removed permitting a return to normal marketing methods. The mills may wish to retain some of their working agreements, in which case price control should be retained to protect the buying public against exploitation.

PART IV.

OTHER RELEVANT CONSIDERATIONS

PART IV. OTHER RELEVANT CONSIDERATIONS.

a. Controls

The statement was made above that government projects, chiefly for defence purposes, have dominated the construction field to such an extent that other factors have been dwarfed into insignificance. That is the key to the situation up to the present. Practically all of these projects have been carried out under pressure and in some cases delivery dates promised have been exceeded and buildings completed in less time.

In such circumstances the government departments, pressing for completion, have done all possible to assist the flow of the necessary materials and controls have not mattered very much. In all the large centres, the construction firms have had wage agreements covering several months or a year in advance and therefore they have not had to worry about labor controls. The result has been that the industry has not been control conscious. The recent Order in Council, P.C. 8253, placing a ceiling on wages, is helping to change this, but it has been true up to now.

The industry has been conscious of licensing, however, and some contractors are quite familiar with its consequences. Whether licensing should be continued after the war is a moot question with many pros and cons. It is recommended by the writer quite definitely that it should be continued, for the following reasons.

1. In the chaotic period that is almost sure to follow the close of the war and the coming of peace, it is imperative that social control should be maintained. The Construction industry occupies such an important place in our industrial structure that it will of necessity have to be included in the scheme of control. What the controls must be and how they will be operated may have to be largely experimental. Licensing means that every building project must have a license, to obtain which the pertinent facts about the project must be furnished to the licensing authority. This data, when analysed and tabulated will furnish part of the basis for the control policy.

2. It is quite within the bounds of possibility that a period of chaos may be followed by a boom period of building when projects will be pyramided and demands made upon the supply industry which it is unable to meet without undue expansion. Mr. W.D. Black, of the Otis-Fensom Elevator Company of Hamilton and a Director of the Bank of Canada, is definitely of the opinion that in boom times licensing is needed to control the situation. His idea, in brief, is that a ceiling should be placed on the value of construction work under way at one time and that when this ceiling has been reached, additional projects should be required to wait until some of the projects, already under way, have been completed. (1)

3. The need for new housing is being met only partially by the National Housing scheme and Wartime Housing. Housing is so important a factor in the health and well-being of the community that the government will have to do more in the future than it has done in the past. To ensure the smooth functioning of a house-building program control of the Construction industry will be necessary. The cooperation of the industry is a prerequisite for the carrying out of any housing program and control may be necessary to ensure that cooperation.

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(1) W.D. Black, "Construction, the Joint in the Armour of a Depression."

The Control Agency.

One of the important aspects of control is the responsibility of the control body or agency. Is it safe, or wise, or expedient, to stipulate what it is desired to control and to what lengths control is to go, and then leave to the control body how control is to be attained and maintained? In other words, how much can be left to the discretion of those who administer the control? Obviously, much will depend on those who do the administering. In any event they must be men of unimpeachable character and have sufficient ability to deal intelligently with any case that comes before them.

They must also be acquainted with the field which they are called upon to administer. This immediately raises the question of whether the controller should be chosen within the industry. Even if his probity is unquestioned, his close acquaintance with some aspects of the field are likely to cause him to favour them in some way. If he is chosen from outside, it takes considerable time for him to learn the field sufficiently well to deal intelligently with all the problems that come to him; yet he may be more objective in handling the general situation. (1)

It is possible that the best arrangement might be to have a "non-industrial" official as controller, with an advisory board, on which all the interests are represented, to work with him; the board's function would be to aid him in framing not only general policy, but also ways and means of carrying out the policy.

The Field of Control.

Questions of first importance rest in what is to be controlled: prices, volume of work, division of total volume among different classes, etc. However, the continuation of licensing provides the basis for practically all control. The issue of a license to build may be made contingent upon furnishing adequate information or meeting several other types of requirements.

The fact that every construction job is special, with no two of them identical, makes the problem of control peculiarly difficult, but some things may be chosen as key-points.

The logical step toward the main end would be, first of all, to control the prices of building materials, e.g., lumber, brick, steel, cement, lime, shingles, etc. This would involve standardization of these commodities, but a measure of this has already been attained and completion of the task is not impossible.

The objective of price control may be stated as follows:

1. To ensure an orderly reduction from high prices now existing to a lower level that will encourage construction.

2. To prevent excessive increase in the price of commodities where the supply is unequal to the demand; or where understandings reached in wartime might prejudice the position of the public.

3. To encourage the construction of residences, schools, and other community enterprises.

A large measure of price control may be attained by control of the prices for building supplies and labour. This may be exercised by the

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(1) Cf. Gaus, White and Dimock, Frontiers of Public Administration, (Chicago University Press).

two Boards now in existence--the Wartime Prices and Trade Board, and the War Labour Board. It should be recognized that control of prices may be required to ensure an orderly reduction of prices as well as to prevent price inflation.

But control of the prices of sand, broken stone, cement, and labour does not necessarily control the price of poured concrete. It would be possible, however, to fix maximum unit-prices for various factors based upon standard prices for the ingredients. It would be difficult to fix the maximum overhead for all types of building; but if bids were filed, or prices at which contracts were let, it might be possible to regulate it after a sufficient body of data had been assembled.

If licensing were retained and widened the applicant for a License could be required to submit complete plans and specifications and quantities. These when checked and approved would form the basis for contract bids which might be on the "cost-plus" basis, with control of the "plus". With control of the prices of standard materials and of the margin of profit a fair measure of control of construction prices might be attained. The implications of this are far-reaching for it would involve the estimating and checking of quantities, close and accurate tabulation of prices of standard materials in all parts of the country, etc., etc.

The preparation of cost estimates is one of the principal weaknesses of the construction industry at present. The cost of every construction job is estimated by every contractor who bids on it. This causes great duplication of work and effort without any commensurate results. If the quantities were taken off by an independent body, whose qualifications and attitude were unquestioned, and furnished to contractors, great savings could be made. Under the existing system this useless duplication of effort must be paid for by the client-- not directly but indirectly. If it were feasible to change the system large savings could be effected.

The control of volume as distinct from control of particular cost factors in the industry might be obtained by putting a ceiling on the absolute amount of construction allowed. Or it might be made to stay within a certain ratio related to the national income.

If the government wished to increase residential construction it might decrease the amount of other building allowed. Almost certainly, however, in order to get sufficient volume of residential building it would have to take some positive action as well, such as some form of bonus scheme.

Summary of Proposals.

1. Make a license necessary for any building costing over $2000. The license fee should be very moderate for small houses but could be bigger for large enterprises.

2. Provide for central and regional Survey Bureaus with competent staffs to take off quantities from plans.

3. Require plans and specifications to be furnished in order to obtain a license, with the quantities supplied by the Survey Bureaus.

4. Survey Bureaus could set down standard unit prices according to conditions prevailing in the region; when approved by the Licensing Authority, these would become binding on contractors. Bids would have to be made on standard quantities with allowances for over-head profit.

5. All bids, or accepted prices to be furnished to the Licensing Authority.

Such control, to be efficient, would have to be based on complete knowledge of conditions within the industry, and of economic conditions generally. This can best be obtained by a staff of wide experience coupled with individual competence, and backed by a board representing the various groups in the industry and the public. The National Construction Council might be modified to discharge the functions of such a board. Alternatively a body such as the National Labour Supply Council, was, widened to include representatives of other interests, might form the nucleus of such a Board.

b. Technical Improvements

As has been suggested above, the construction industry is far from ready for rapid technological change.

There is a difference, perhaps, between specific details of construction technique and changes affecting the organizations of the whole construction process. One source of loss in the construction industry which might be remedied more easily than others and which hasty wartime building and heavy demands on the lumber supply are bringing to the fore, is the use of unseasoned lumber that is not thoroughly dry. This has many ramifications each of which must be treated separately. To begin with, the shrinkage of wet lumber, after it has been used in the construction of buildings, causes cracking of plaster, the opening up of cracks in the floor, badly fitting windows, and doors which have to be refitted and caulked or weather-stripped to prevent the infiltration of cold air.

The cost of drying lumber is not great if properly designed and constructed dry kilns are used. Many of the kilns in use up to the present have been anything but efficient, but today there are in existence kilns which are designed on scientific principles which give the maximum of efficiency at low operating cost. The widespread use of such kilns and the use of thoroughly dry lumber would result in slightly higher first cost of lumber but decreased over-all cost due to the advantages resulting from the better quality. Control might therefore be applied to the degree of moisture allowed in lumber used in the construction of houses. And it might be worth while for the government to subsidize the building of such dry kilns, just as it has aided the establishment of drying plants for grain.

Of wider implication is the application of so-called mass production methods to the building of houses. "Mass techniques" which should rather be labelled common sense methods, will undoubtedly result in decreased cost of houses. If houses are built in considerable numbers instead of one at a time, division of labour can be made use of to great advantage and with resultant economies. For example, one gang does all the excavation work going from one house site to the next, in rotation. The foundation form builders follow and by the use of proper designing and planning, form work can be made in sections and quantities which require a minimum amount of fitting in assembly. The concrete gang follows along after the form builders; then the erectors come along; then the pipe fitters, electricians, etc., in the proper order until the houses are complete. The value of these methods has been proved on construction of various jobs recently and there is no reason why they cannot be more widely used on housing schemes.

A good deal of experimental work has been done by architects and town planners in the design of mass housing, and there is no doubt that by the use of such methods housing at reduced cost can be secured. These plans should be subjected to the most rigid scrutiny to see that the bad features of old-time tenements and terraces are not repeated. Those plans which stand such scrutiny should be adopted and put into action just as soon as labour and material are available.

As evidence that improved technology and some radical experiments will have to be reckoned with in the post-war world, the following press items may be worth quoting. The first is from London, England, the second

from Glasgow, Scotland.

1. "The architects and surveyors of Britain's big cities are already taking steps to meet the housing shortage which the end of the war is bound to bring.

Mr. D. E. C. Gibson, the city architect of Coventry, has designed a house which can be made in factories on a mass-production basis and assembled at a speed undreamed of before the war. A whole colony of the new-type houses can be assembled in a few weeks.

The house is designed on a steel frame, and has ample accommodation, with an average of three bedrooms. Mr. Gibson claims that once production is well under way, these quickly built dwellings will prove much cheaper than the average brick house.

Another important point is that the manufacture of the steel frames would provide work for armament factories which will come to a standstill when the victory is won."

2. "The possible forerunner of thousands to come, the first all-plastic house, may be tried out soon in Glasgow. The plastic window and door frames, partition walls and other large component parts, even the bath of this experimental house, are to roll off gigantic hydraulic presses, which mold these large parts in a single action.

The new production process, presumably involving an entirely new plastic, is being developed by the Building Plastic Research Corporation. An official British report states they hope to solve the problems of replacing in plastic not only proofs, walls, stairways, but 'every part of a dwelling formerly made from metal, wood, or ceramics'."

In the United States, a recent pamphlet on housing by G. Greer and Dr. Alvin Hansen recommends the setting up at once of a research and experimental agency with broad powers and a mandate "to continue operations until a solution on a full commercial scale is found of the problem of producing good low-cost dwellings-- low-cost in terms of the total amount required to pay for their construction and subsequent maintenance and occupancy-- both for rent and for sale. It should engage the services of competent engineers, architects, economists, lawyers, and other specialists, and its operations should consist not only of laboratory experiments (in several different regions) but of the actual construction of sufficient numbers of dwelling units of various kinds to show the industry how to solve the organizational and technical problems involved."(1)

c. Post-war Construction Programmes

When interviewing contractors one of the questions asked was "Do you think that licensing will build up a backlog of building?" It is significant that not a single one thought that it would, and most of them were quite positive that it would not. An architect in Toronto thought there would be quite a backlog of building when the war was over but he happened to have commissions for some institutional buildings for which the money was in hand but action was put off till after the war. It is important to bear in mind that this refers to building undertaken on a commercial or private basis. My own opinion is that there is little to hope for in this direction from private enterprise, without other special conditions which will stimulate the market.

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(1) Urban Redevelopment and Housing (National Planning Association, Washington, D.C.).

(The Construction Controller is keeping a file of all applications for licenses that are refused; and this is an important source of information as to the potential backlog, particularly of commercial and individual building. It will no doubt, have to be interpreted with discretion, however.)

The industry can hardly be expected to take the lead in a housing program or any other aided or sponsored publicly but it should be expected to cooperate and I believe that most of the leaders will. If the programmes were put up to them as it was in the case of war projects I am sure that they will do what is expected of them. There is the usual proportion of people in the industry seeking only their own advantage but there is also a goodly proportion who are vitally and genuinely concerned about the future and who are ready to do their share, or a little more, to help meet the post-war situation as it requires.

The Canadian Construction Association and the Canadian Construction Council are both willing to cooperate but are waiting to be asked to do something by the government or government agency. Consultation of representatives of the Committee on Reconstruction with either or both of these might help to clarify the situation and result in concrete proposals for assisting in the solution of the post-war problems.

The Canadian Construction Association presented a brief to the Bennett government back about 1933 advocating a government program of construction. The Canadian Construction Council presented a brief to the Rowell Commission on the Effects of Municipal Taxation on the Construction Industry. The Joint National Conference of the Construction Industry which was held in Ottawa in February 1941 (see pp. 2-3) submitted a recommendation including fourteen items as a basis for a Reconstruction Program. (Proceedings of Conference, p. 6) These facts show that the industry is not devoid of ideas and not backward in expressing them. Evidently they think that the lead for the next move should come from the government.

Mr. Eric Jacobsen, a designing engineer for the Dominion Bridge Company, has put the suggestion regarding a program of reconstruction in this form: that as Germany developed a "War Book" in which a program for war was worked out in great detail, so Canada should develop a "Peace Book". The idea of a post-war works reserve has become familiar also in other ways. The post-war "Peace Book" would begin with a general program for reconstruction which would be followed by a classification of the scheme in detail. This might be done by provinces or other geographical areas; or it might be done under subject heads, such as, public works, education, housing, road building, agricultural relocation and rehabilitation, municipal buildings, etc. In any case, however, the projects should if possible be rated according to their importance, socially as well as industrially. Ratios or indexes might be worked out showing the correspondence between the level of employment on the one hand and the importance of the project, socially on the other. Those which were more important socially would be taken up first, and those of lesser importance later.

The need for the provision of improved roads and bridges is widespread, and a program for such should find a place in the Peace Book. The provision of sewage and garbage disposal systems for growing communities, and improved water supplies, are also urgent chiefly from a health point of view. Many of them may wait upon the provision of cheap credit. There is no need for projects to be restricted to the routine of municipal provision, however, one of the great needs today is improved school buildings and special schools for vocational education. These were needed before the war and the need will be more urgent by the time the war is over. In many cases the provision of credit at low rates of interest, say at 1.5 or 2 per cent, would enable municipalities to carry out projects themselves. The objection to such rates is well known; but if the Federal Government can build schools for the training of airmen in wartime, some way can be found for lending money at low rates for the building of vocational and other schools.

There does not seem to be any need to add to this list as many of these things have already been suggested during the depression years. They should all be surveyed, and put in their appropriate place in the program.

Community groups might be asked to work out the program in specified areas or to contribute ideas for inclusion in the program. This is a task that might well be put up to the Canadian Construction Council. The Council includes in its membership influential groups who have plenty of data at their disposal, which would need classification and arrangement for the end in view, and probably some appropriate coordination with governmental plans.

It might be considered advantageous to set up a number of Corresponding Committees in the various fields, creating some liaison, through their chairmen, with the Reconstruction Committee. Further, when any particular aspect of the program was under discussion by the Committee the chairman of the corresponding committee in that field could be asked to sit in with the Reconstruction Committee. Corresponding Committee chairmen might, alternatively, form an advisory body or board as suggested above. These suggestions are sketchy but it does not seem wise to spend time working out an elaborate scheme of organization at this stage. If the ideas find favour with the Committee on Reconstruction, they can be worked out in greater detail.

Post-war Building Programme: Summary.

1. Encouragement of housebuilding, by:

   a. Provision of cheap loans or credit for low-cost housing.

   b. Standardized plans (allowing for some modification to provide diversity in exterior appearance, and some limited changes in interior arrangement).

   c. Standardized construction units, e.g., kitchens, bath room, electric service, heating, etc. (Standard packages)

   d. A Provisional program for mass housing, in particular working out schedules for the minimum number of houses needed to ensure economy in production.

   e. Cooperative research by architects, builders, engineers, town planners, etc. Advance surveys and plans to be started now and developed as seems appropriate before the end of the war.

2. Assistance to municipalities in the form of cheap money for building schools, and other community amenities.

3. Setting up of an appropriate research unit to organize active exploration of construction improvements, especially for housing.

4. Subsidization of scientifically-designed dry kilns; possibly other aids for utilization of domestic building materials.